Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Improving Public Safety Communications	)	
in the 800 MHz Band	)	WT Docket No. 02-55
	)	
Consolidating the 900MHz Industrial/Land	)	
Transportation and Business Pool Channels	)	

COMMENTS
OF THE OFFICE OF THE CHIEF TECHNOLOGY OFFICER,
GOVERNMENT OF THE DISTRICT OF COLUMBIA

The Office of the Chief Technology Officer of the Government of the District of Columbia ("OCTO") is pleased to respond to the Notice of Proposed Rule Making ("NPRM") in the captioned proceeding, FCC 02-81, released March 15, 2002. The Government of the District of Columbia operates an 800 MHz Public Safety Network and therefore has strong interest in the outcome of this proceeding.

Introduction

Public Safety wireless communications in the 800 MHz band are regularly subjected to detrimental radio interference from commercial radio services ("CMRS") that seriously impact the ability of Public Safety to perform the essential service of protecting life, health and property. These interference problems have become so dangerous as to warrant this NPRM in support of 800 MHz band realignment. OCTO commends the FCC, Public Safety advocates and associations and concerned CMRS carriers for their leadership in this proceeding. OCTO is committed to supporting the NPRM to a successful conclusion.

It has been observed that CMRS interference occurs more and more frequently today, although all licensees in the band are purportedly operating in compliance with the FCC rules.

The Government of the District of Columbia has experienced interference in the 800 MHz operating band that was so significant as to warrant complaints to the FCC[1]. The District, therefore, has direct experience and strong interest in supporting the objectives of this NPRM.

As explained in the Notice, the principal causes of Public Safety related interference have been identified as[2]:

- The complex spectrum allocation scheme that gave Public Safety and CMRS a mixed of adjacent and interleaved channels in the 800 MHz band;
- The architecture migration of CMRS systems from analog noise limited systems to digital interference limited cellular type systems. This evolution had a dramatic effect on the radio environment in this band, and greatly increased the exposure of Public Safety receivers to higher levels of undesired electromagnetic field strengths.

As further proof of the seriousness of the problem and its impact upon Public Safety operations, the industry published "The Best Practices Guide" in December 2000[3] to assist the Public Safety and other concerned entities in addressing the interference issues. This guide highlights the necessity for carriers and Public Safety agencies to closely coordinate the engineering of their systems.

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[1] On September 13, 2001, the Government of the District of Columbia registered a direct complaint against Nextel specifically, and the CMRS industry generally, concerning service degrading interference experienced by the District with its 800 Mhz Public Safety network.

[2] As described in the Notice, pp. 4-11.

[3] Funded by Nextel and Motorola, "The Best Practices Guide" is the product of a working group composed of the funding entities, Association of Public Safety Communications Officials ("APCO"), Cellular Telecommunications Industry Association ("CTIA"), Telecommunications Industry Association ("TIA"), and the Public Safety Wireless Network ("PSWN").

The growing prevalence and severity of the interference problems, and its recognition by both the Public Safety and the CMRS industries, demonstrate the urgent need for the FCC's proposal to:

1. Reallocate the whole Band such that potential interference occurrences are minimized.
2. Facilitate the coordination process
3. Enhance the performance of the installed equipment

In doing so, the FCC should well recognize that Public Safety entities bare the brunt of interference and therefore should receive preferred consideration and necessary monetary relief if these objectives are to be realized. We cannot overstate the critical importance of this NPRM to Public Safety agencies, which provide critical and valuable services to citizens and must have sufficient, interference free, radio channel capacity to ensure the success of their mission. The interests of these agencies must be paramount in this proceeding.

OCTO recognizes that there are tremendous commercial interests and competitive pressures at stake in this proceeding. While it is not the intention of Public Safety to diminish competitive influences resulting from this NPRM, or recommend band restructuring to the detriment of commercial operators, the first priority for all concerned must be the immediate needs of Public Safety in eliminated detrimental interference and in obtaining additional radio spectrum to support their services. Since the final realignment strategy will invariably result in significant, prohibitive implementation costs to Public Safety, the costs associated with implementing the final solutions must be shared by the CMRS industry.

OCTO's specific comments on band realignment, cost apportionment, management of frequency coordination, and other NPRM related issues follow.

Band Realignment

OCTO fully agrees with the FCC that a realignment of the 800 MHz band is required to mitigate interference with Public Safety operations. It is not possible for diverse and incompatible wireless operators to share common and interleaved spectrum in this band. This situation can be efficiently remedied in this proceeding and while some credible alignment proposals have been tendered , OCTO believes that the plan offered herein, which is an enhanced variant of the National Associations of Manufacturers ("NAM") proposal, will both minimize/mitigate interference and segregate incompatible operators at minimal impact to current operations and with minimal need to retune channels.

OCTO does not support incumbent relocation to another band.

We do not support Nextel's proposal [4] to relocate part of the 800 MHz incumbents to alternative bands for the following reasons:

1. The relocation of the Business, Business, Industrial/Land Transportation (B, I/LT) incumbents to the 700 MHz guard band (762-764/792-794 MHz) or 900 MHz (896-901/935-940 MHz) is not a viable solution. Although this is a generous proposal from Nextel to surrender a part of the spectrum they acquired, Nextel does not hold licenses to nationwide 700 MHz licenses, or the full 900 MHz spectrum, over all its markets[5]. Therefore, in some areas, it is unlikely there will be sufficient spectrum to fulfill the needs of the relocated incumbents. We are also opposed to forcing such a significant migration of B, I/LT operators from the 800 MHz band since their operations are more similar and therefore compatible with those of Public

[4] The Nextel plan is described on pp. 15-17 of the Notice.

[5] See Exhibits A, B, C in Annex One of the Notice

Safety. There is also no good rational to eliminate guard bands that have been extremely successful in mitigating common band interference.

2. The schedules associated with such a relocation are incompatible with a timely resolution of the interference issues because:

a. The relocation bands[6] are not yet clearly identified. Additionally, the targeted band could imply either a co-existence with alternative existing services where compatibility is not demonstrated, or serve to create a ripple administrative effect whereby the relocation of incumbents operating in the targeted band could result in additional relocation activities or new interference mitigation issues.

b. Regardless of the final relocation band, there is no evidence that viable equipment is available in the chosen band. In the event that radio equipment does not yet exist, the time necessary to develop such equipment, and associated features, will further delay the 800 MHz interference resolution schedule.

c. The propagation characteristics of the 800 Mhz frequencies and the listed potential relocation bands other than the 700MHz guard band and the 900 MHz band are dramatically different. In particular, all the other targeted spectrum bands listed in the Notice are in much higher frequency bands. Therefore, the achievable coverage ranges are much shorter. Thus, relocating 800 MHz operators to higher frequency bands would require not only a complete reengineering of the incumbent system, but also would translate

[6] See the Notice, pp. 23-24 and 30-45.

into the requirement for additional antenna sites, and hence cost. The timeframe for designing, acquiring and constructing new sites usually ranges from several months to several years, and would therefore unduly delay resolution of the interference issues.

3. The costs of relocating any non-commercial, or commercial non-spectral fee generating incumbent to other bands are prohibitive because, as explained above, they entail:

   a. The development and production costs of new equipment;

   b. The operational replacement of all mobile, control and base stations, antennas and cables;

   c. The construction of new sites to compensate for the different propagation losses in higher frequency bands. These costs have two cost components: 1) an extensive capital investment consisting of designing, acquiring, and constructing new radio sites; and 2) recurring operational costs for antenna site location rent and leased lines and other reoccurring costs for operational and maintenance purposes.

OCTO Proposes a Band Realignment Plan

OCTO believes that each of the alignment plans presented in the NPRM have merit, and all could be implemented at various levels of complexity and eventual benefit to the impacted parties. As requested by the Commission, OCTO offers a unique plan based on minor variation to the NAM and FCC proposals. The OCTO plan achieves aggregation of Public Safety, B, I/LT and Cellular SMR operators into simpler-to-manage allocation

"Service Pools" that combines the Services into groups to eliminate the interleaving and adjacent channel sharing in the current plan.

We believe this plan will achieve the Commission's objectives at minimal impact and associated costs to the incumbents. This plan aggregates all Public Safety spectrum at the lower end of the 800 MHz band and locates all Public Safety Spectrum adjacent to future 700 MHZ Public Safety spectrum. It also provides 45 much needed additional Public Safety channels. Public Safety would be required to relocate from the 821-824 MHz/866-869 MHz band.

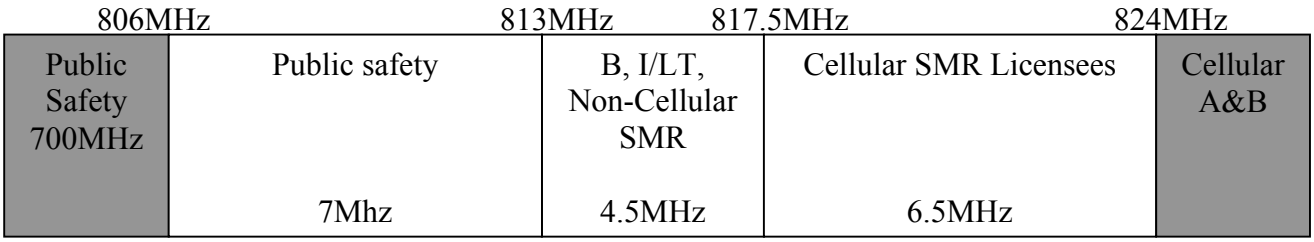
The plan contemplates minor frequency retuning of the Business, Industrial/Land Transportation (B, I/LT) services incumbents at virtually no reduction of current channel allocation. These services would also be aggregated to manage interference and interoperability. Cellular SMR Operator channels would also be aggregated into a common area of the band, and while these operators would be required to sacrifice some current channels, we believe the plan will result in a net benefit in service capacity due to the simplicity and technical benefits in frequency planning "Service Pool" channels. CMRS operators will also have greater flexibility to utilize additional channels that may now be unavailable due to interfering restrictions.

The current 800 MHz spectrum assignment[7] plan, if we assume the "General Category" band is equally shared by the different Services pools, provides 5.6875 MHz to Public Safety, 4.375 MHz to Business, Business, Industrial/Land Transportation (B, I/LT), and 7.9375 MHz for both digital cellular SMR and non cellular SMR. The OCTO plan results in

[7] The current band allocation chart is described p7 of the Notice.

minor and administratively achievable adjustments to this current allocation. The chart below describes the realignment plan proposed by OCTO:

Mobile and Control Station Transmit Frequencies



Base Station Transmit Frequencies

Primary elements of this plan are:

1. Three distinct and contiguous 800 MHz radio services spectral blocks would be created:
    a. One for Public Safety,
    b. One for digital cellular type of implementation of the SMR technology, and
    c. One for Business, Business, Industrial/Land Transportation and non-cellular SMR.
2. The amount of spectrum allocated to Business, Industrial/Land Transportation and non-cellular SMR would be equivalent to the existing allocation.
3. In addition, as proposed by Nextel, the Business, Industrial/Land Transportation and non-cellular SMR would be allowed to keep their frequencies on a secondary basis. They would have to retune their systems to their new spectrum pool only if:
    a. Public Safety claimed the use of realigned frequencies;

b. The "legacy" incumbent systems were sources of interference to the retuned incumbents.

4. The Lower 800 MHz band would be allocated exclusively to Public Safety. The amount of spectrum allocated to Public Safety would be increased to 7 MHz. The shortage of Public Safety spectrum is well recognized, and any increases will have significant positive results for these operations. Therefore, the FCC should seize the opportunity to allocate additional spectrum to Public Safety in this proceeding and continue to ease restrictions for Public Safety access to the upper 700 MHz band.

Although the FCC has already made significant efforts to address capacity issues for Public Safety, new spectrum in the 700 MHz band, and eventually at 4.9 GHz, could be significantly delayed for Public Safety[8]. In addition, as the necessity for high-speed, interoperable, mobile data has emerged for Public Safety, new spectrum allocations are immediately needed. The Public Safety Wireless Network ("PSWN"), in its "Spectrum Issues And Analysis Report" of December 1999[9], concluded that:

a. Public Safety had a total of 71.55 MHz of spectrum allocated (including the 24 MHz allocated in the 700 MHz band); and

b. Based on PSWAC recommendations, an additional 73.5 MHz is required by Public Safety.

5. To provide Public Safety additional opportunity to increase capacity, we propose to define a 12.5 KHz channelization for the Public Safety channels pool, with the

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[8] The release of 700 MHz spectrum to Public Safety is currently delayed until, at earliest, 2006, and contains restrictions, overly supportive to the broadcast industry, that could delay release for many years beyond 2006. This situation is untenable given current channel requirements in the District of Columbia.

[9] PSWN, "Spectrum Issues And Analysis Report", December 1999, p. II-3.

possibility to aggregate channels per pair. This situation presents itself in the Service Pool alignment planning.

6. The amount of cellular SMR spectrum is slightly reduced in the OCTO proposal, although a larger block of continuous spectrum (2 x 6.5 MHz instead of 2 x 5 MHz + isolated individual channels) will allow these operators to develop more efficient frequency plans and effectively increase capacity. As compensation for willingly transferring their frequencies, the cellular SMR operators would receive FCC authorized discounts, to be defined by the FCC, on the coming auctions of commercial 700 MHz or other frequencies as desired. We believe this approach to be fair and equitable for these operators.

This proposal offers the following benefits for all parties:

1. By eliminating the convoluted interleaved channel assignments and grouping similar services into dedicated blocks, each with similar network architecture type, the plan will therefore ease frequency management and significantly reduce current interference problems.
2. It avoids the relocation of incumbent to alternative bands, and therefore minimizes the transition period.
3. It minimizes all resulting system retuning, since, for the various Service Pools, there is significant spectrum overlap between the current plan and the proposed plan. Moreover, because Business and Industrial and Land Transportation systems will be able to stay on the actual assigned frequencies on a secondary basis, the plan will further minimize system retuning.

4. It gives Public Safety a block of spectrum adjacent to the one they will receive in the 700 MHz band, allowing them to more efficiently manage investment in their systems.

Public Safety Should Not Support Retuning Costs

OCTO believes all channel coordination costs, and the direct hard costs of retuning the various systems and radios, in the OCTO proposal or any other proposal implemented, should be funded by all CMRS operators in the band. Imposing special fees on all band CRMS operators proportional to their national spectrum licensing can raise the required funding. If these costs are proportionally allocated, actual costs per operator will be minimal in comparison to the eventual benefit to the public. Since the primary beneficiary of Public Safety services is obviously the general public, we believe that Congress should participate actively in developing and implementing a creative band alignment financing plan, which could include fees imposed on spectrum licensed to broadcast entities, in achieving the stated Commission objectives.

The actual cost of implementing the OCTO plan should be minimal in comparison to the Nextel proposal and equivalent to either the NAM or FCC proposals. The alignment compensation proposed by Nextel in its plan[10] to relocate impacted systems is insufficient to support the overall plan. OCTO anticipates that a better understanding of these costs will be presented in industry comments filed in this proceeding, which OCTO will use to translate to estimated costs in support of the OCTO proposal. OCTO recommends that, before specific coordination and retuning funding/compensation to

[10] See the Notice, pp. 25-26.

Public Safety and other non-CMRS is determined, information provided by the industry in this proceeding should be evaluated regarding the number of base stations and radios that are affected by the retuning. Important factor to include in this evaluation would be the type of equipment in place, and the cost involved in the frequency tuning for each specific equipment type. Some equipment would require only minor retune of radios and base equipment. For other, older legacy equipment, the frequency retuning could involve the replacement of a part, or all of the hardware. OCTO is committed to providing band alignment cost estimates based on industry supplied data to determine the anticipated cost and required funding to support the proposal.

Facilitation of the Frequency Coordination Process

OCTO anticipates the creation of a master transition plan and an oversight managing committee to facilitate band alignment essential to the success of this complex program. These activities will require considerable coordination and participation of all affected parties and are best centrally managed. The following considerations are primary components of the recommended transition and coordination planning and implementation activities:

1. As suggested by Nextel[11], once the realignment plan is adopted, the FCC should promptly mandate the retuning of all band incumbents under the direct management of the approved coordination agencies. This will be best accomplished under the direction of a Transition Planning Committee composed of interested

[11] See the Notice, p. 23.

parties from each of the Service Pools. Therefore, we recommend the nomination of a temporary 800 MHz Band Transition Committee to develop and manage all aspects of the transition process. This committee should include representatives of the various frequency coordinators, as well as representatives of the relevant CMRS operators, with equipment vendors acting as advisors to the committee.

This Transition Committee would be responsible for:

a. Engineering the Service Pool frequency plan that effectively mitigates existing interference problems including harmful inter-modulation products.

b. Developing a plan, in conjunction with the regional coordinators, that will facilitate transition from the existing to the new frequency plan. Planning would include decision making standards to guide the implementation process as well as transition funding programs and budget management. Various considerations guiding the channel transition plan will need to be taken into account in this planning role. For instance, depending on the technology and the age/version of the installed equipment, retuning might be a simple radio and/or cavity tuning exercise, or could include the replacement of critical elements such as the combiners. There may be situations where entire equipment replacement is warranted. These activities (frequency planning/tuning/hardware swap) need to be synchronized such that incumbents, in particular Public Safety, do not suffer interruption of service or severe interference, during the transition period.

c. Working directly with the regional planning committees to approve regional recommendations to monitor performance and provide oversight

administrative support, including any grievance considerations locally raised to the transition committee.

We recommend that the Regional Planning Committees (RPCs) currently authorized for the Public Safety NPSPAC channel coordination administer the coordination mechanics for Public Safety. Another set of coordinators would be certified for the Business, Industrial/Land Transportation, also working at the regional level. The coordination process should be simplified and unified, and the frequency coordinators provided with the tools needed to support them as efficiently as possible. We believe that, as proposed by Nextel[12], a Public Safety Special Coordinator and a B, I/LT and Non-Cellular SMR Special Coordinator, composed of representatives of the existing certified coordinators, is best suited for recommending frequency retuning plans in their respective bands. Those coordinators would operate at a regional level as the NPSPAC and the new 700 MHz RPC's are currently performing. This arrangement will result in more consistency in the management of the spectrum, as will the use of a unique database and propagation tool, as suggested by Nextel[13]. Additionally, the Regional Planning Committee will coordinate inter-Service Pool operators for adjacent channel interference issues.

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[12] See the Notice, pp. 40-41.

[13] See the Notice, p. 39.

[14] See the "Best Practice Guide", December 2000, page 13

3. Under this coordination effort, a unified common licensing database, available to all coordinators, would be desirable to support the coordination process effectively. During the primary coordination period, The Transition Planning Committee would initially build and manage the database, which would eventually be transferred to the Public Safety Special Coordinator and the B, I/LT and Non-Cellular SMR Special Coordinator to manage the corresponding frequency pools.

In addition, computerized coordination programs consistent with the prediction models recommended in Telecommunications Bulletin TIA TSB-88-A[15] should be mandated to perform the frequency assignment, so that the different coordinators are able to work with comparable service contours.

4. The OCTO proposed band realignment plan does allocate additional radio channels to Public Safety. We believe that the assignment of those additional channels should also be coordinated at a regional level. The channel assignment criteria should take into account the fundamental needs of regional Public Safety entities. The communication requirements of those entities are fundamentally linked to the degree of urbanization and population density of the area under consideration. Therefore, the number of channels allocated to neighboring Public Safety communities should reflect the number of channels based on population densities as well as per channel user loading. Such an approach would allow respective Public Safeties to provide services, including wireless data, that are appropriate and adequate to their varying local communities and will provide a reasonable bridge from 800 MHz spectrum to 700 MHz channel availability.

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[15] TSB 88 A Wireless Communications Systems-Performance in Noise and Interference-Recommended Methods for Technology Independent Modeling Simulation and Verification

Other Measures

The FCC Should Mandate the Reduction of Out of Band Emissions

OCTO supports Nextel's proposal regarding the Out of Band Emissions limitations. We believe the FCC should direct CMRS licensees to implement additional filtering to their transmission Base Stations transmitters systems to further protect Public Safety channel operations. As specified by Nextel in its White Paper[16] (p. 33), an acceptable emissions level of 85 dB minimum attenuation of the CMRS carrier channel below the Public Safety desired in-band carrier level is reasonable.

The FCC Should Encourage Public Safety to Improve Public Safety Receivers

OCTO supports Nextel's proposal to encourage Public Safety to enhance receiver performance, and we encourage equipment vendors to offer such solutions. However, we believe the FCC should not mandate such steps by Public Safety. As the victims of undesired interference, Public Safety must make this choice in conjunction with other corrective actions that are appropriate to manage interference. Should Public Safety decide to proceed with upgrading receivers, the associated costs should be shared between identified interfering entities.

The FCC Should Not Mandate Increase of Public Safety Coverage Level

OCTO does not support the proposal to increase the level of the Public Safety coverage desired signal in the vicinity of digital SMR base stations. As pointed out in the Notice, this

[16] Nextel White Paper: "Promoting Public Safety: Realigning the 800MHz Land Mobile Radio Band to Rectify Commercial Mobile Radio-Public Safety Interference and Allocate More Spectrum to Meet Critical Public Safety Needs"

proposal would primarily require Public Safety to construct of additional sites to achieve required signal levels. We opposed this proposal because:

- The time required to construct new sites (from several months to several years) are incompatible with the desired timely resolution of the original interference problem.

- The costs generated by such a solution are not affordable by Public Safety, unless CMRS is willing to support all required funding for coverage level increases. In addition, there are significant reoccurring operational costs (site rents, operations and maintenance, leased lines, and others) that are not prudent for a Public Safety entity to incur.

- Moreover, cellular operator subscriber base and service delivery requirements continually expand, and as a result additional macro and micro sites are incorporated into their network design. New antenna sites will increase the service noise floor and create even more interference for Public Safety services. Consequently, Public Safety would continually be forced to add new sites to maintain a desired coverage level over and beyond CMRS interference. This is simply not a reasonable mitigation strategy for Public Safety to absorb and therefore does not satisfy the public need.

OCTO Summary of Comments

The FCC is pursuing the best course of action in realigning the 800 MHz band to mitigate existing service interference between incompatible wireless operators. The timely pursuit of this objective will benefit all users in the band and ultimately serve the general public's need for uninterrupted Public Safety communications. This proceeding also presents an opportunity for

the FCC to provide additional channel capacity to Public Safety to address immediate congestion problems while mitigating harmful interference.

The OCTO alignment proposal provides the Commission with another viable alternative, and is compatible with current proposal and should be given serious consideration. It is imperative that contiguous spectrum be allocated for each of the Service Pool operators to mitigate interference and simplify future coordination inter and intra coordination activities for the operators.

Finally, in developing a funding proposition supporting the eventual band alignment actions, a combination of direct CMRS fees balanced with credits to carriers surrendering radio channels and other incentives is recommended to minimize any direct monetary consequences imposed on CMRS operators. A fair plan will hasten operator adoption and soften any perceived band alignment competitive inequity.

Respectfully submitted,

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